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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,224	09/08/2003	Edward Colton Greene	NVIDP224B/P000872	5350
28875	7590	10/07/2004	EXAMINER	
Zilka-Kotab, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			NGUYEN, PHU K	
			ART UNIT	PAPER NUMBER
			2671	

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/658,224	<b>Applicant(s)</b> GREENE ET AL.	
	<b>Examiner</b> Phu K. Nguyen	<b>Art Unit</b> 2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*Shu Nguyen*  
 RECEIVED  
 11-18-03  
 2671

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2671

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over GREENE (Hierarchical Polygon Tiling with Coverage Masks).

As per claim 1, Greene teaches the claimed "graphics system including a scene manager, geometric processor means, renderer means, hierarchical depth buffer means, and a far clipping plane" (Greene, page 71, column 2, Implementation of the graphics algorithm with a computer software programmed in C), said system comprising "means for updating said far clipping plane" (Greene, page 70, column 2, Lazy Z-Buffering, lines 31-43; the clipping value zfar is updated corresponding to its cell). It is noted that Greene does not explicitly teach the far clipping plane is updated "based on the farthest depth value in said hierarchical depth buffer means" as claimed. However,

given the dependency of the clipping Znear and Zfar depth values on its covered cell, it would have been obvious to update the Zfar value based on the farthest depth value because it reduces the processing time for clipping the object due to its smaller range in comparisons of depth values in Z-buffer within the covered cell.

As per claim 2, Greene teaches the claimed "graphics system", comprising: a geometric processor; a hierarchical depth buffer; a renderer; and a far clipping plane that is capable of being updated" (Greene, page 65, column 1, lines 19-26; page 70, column 1, lines 37-51; page 71, column 2, Implementation of the graphics algorithm with a computer software programmed in C). It is noted that Greene does not explicitly teach the far clipping plane is updated "substantially based on a farthest depth value" as claimed. However, given the dependency of the clipping Znear and Zfar depth values on its covered cell, it would have been obvious to update the Zfar value based on the farthest depth value because it reduces the processing time for clipping the object due to its smaller range in comparisons of depth values in Z-buffer within the covered cell.

Claim 3 adds into claim 2 "a scene manager" which Greene teaches in page 69, column 1, lines 1-16.

Claim 4 adds into claim 2 "depth value is in the hierarchical depth buffer" which Greene teaches in the page 68, Data Structure in which all the depth data is stored in the hierarchical Z-buffer.

Claim 5 adds into claim 2 "the hierarchical depth buffer is in communication with a culling stage" which Greene teaches in page 69, column 2, Hierarchical Object-Space Culling.

Claim 6 adds into claim 5 "the culling stage is coupled between the geometric processor and the renderer" which Greene teaches in the culling process (page 69, column 2 to page 70, column 2, line 10) in which the culling is performed after the process of inputted data and before the rendering for display.

Claim 7 adds into claim 2 "the far clipping plane is updated based on the farthest depth value" which Greene does not explicitly teach. However, given the dependency of the clipping Znear and Zfar depth values on its covered cell, it would have been obvious to update the Zfar value based on the farthest depth value because it reduces the processing time for clipping the object due to its smaller range in comparisons of depth values in Z-buffer within the covered cell.

Claims 8-12 claim a method based on the system of claims 1-7, therefore, they are rejected under the same reason.

Claims 13-15 claim a computer program product to perform the function of the system of claims 1-7 which Greene teaches in the implementation of these function in a software programmed in C (page 71, column 2, Implementation); therefore, they are rejected under the same reason.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 - 9796. The examiner can normally be reached on M-F 8:00-4:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2671

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu K. Nguyen  
September 30, 2004

  
